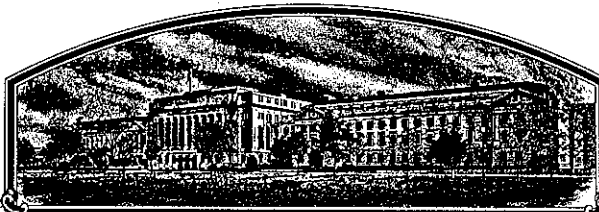


No.

8600018



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

## Asgrow Seed Company

Whereas, THERE HAS BEEN PRESENTED TO THE  
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (CAP. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'A5149'

Attest.

*Kenneth H. Ears*  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

In Testimony Whereof, I have hereunto set  
my hand and caused the seal of the Plant  
Variety Protection Office to be affixed  
at the City of Washington, D. C.  
this 31st day of July in  
the year of our Lord one thousand nine  
hundred and eighty-six.

*Richard E. Lyng*  
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

APPROVAL EXPIRES 4-30-85

FORM APPROVED: OMB NO. 0581-0055

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) <u>Asgrow Seed Company</u>		2. TEMPORARY DESIGNATION	3. VARIETY NAME <u>A5149</u>
4. ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) <u>9620-190-25</u> <u>Gull Road Bldg. 190</u> <u>Kalamazoo, MI 49001</u>		5. PHONE (Include area code) <u>(616) 385-6605</u>	
6. GENUS AND SPECIES NAME <u>Glycine Max</u>		7. FAMILY NAME (Botanical) <u>Leguminosae</u>	
8. KIND NAME <u>Soybean</u>		9. DATE OF DETERMINATION <u>October, 1980</u>	
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) <u>Corporation</u>		FILING DATE <u>11/15/85</u> TIME <u>2:00</u> <input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M. AMOUNT FOR FILING <u>\$1,800</u> DATE <u>10/25/85</u> AMOUNT FOR CERTIFICATE <u>\$200.</u> DATE <u>June 16, 1986</u>	
11. IF INCORPORATED, GIVE STATE OF INCORPORATION <u>Delaware</u>		12. DATE OF INCORPORATION <u>March 22, 1968</u>	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS <u>John Batcha</u> <u>9620-190-20</u> <u>Asgrow Seed Company</u> <u>Kalamazoo, MI 49001</u> PHONE (Include area code): <u>(616) 385-6605</u>			
14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED			
a. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)			
b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement.			
c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of Variety (Request form from Plant Variety Protection Office.)			
d. <input checked="" type="checkbox"/> Exhibit D, Additional Description of Variety.			
e. <input checked="" type="checkbox"/> Exhibit E, Statement of the Basis of Applicant's Ownership.			
15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act.) <input type="checkbox"/> Yes (If "Yes," answer items 16 and 17 below) <input checked="" type="checkbox"/> No			
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> Yes <input type="checkbox"/> No		17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> Foundation <input type="checkbox"/> Registered <input type="checkbox"/> Certified	
18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? <input type="checkbox"/> Yes (If "Yes," give date) <input checked="" type="checkbox"/> No			
19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> Yes (If "Yes," give names of countries and dates) <input checked="" type="checkbox"/> No			
20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT <u>John A. Batcha</u>		DATE <u>October 11, 1985</u>	
SIGNATURE OF APPLICANT		DATE	

Asgrow Seed Company  
PVP Application - Soybean A5149  
October 11, 1985

## EXHIBIT A

## ORIGIN AND BREEDING HISTORY OF A5149

- 1977 ORIGINAL CROSS OF A3860\*N72-3058 WAS MADE IN MISSOURI.  
IT WAS ASSIGNED CROSS NUMBER M77858.
- 1977-78 F1 GENERATION GROWN AT DELRAY BEACH, FLA.  
PRODUCED F2 SEED.
- 1978 F2 GENERATION GROWN IN MISSOURI.  
F3 SEED PRODUCED.
- 1978-79 F3 GENERATION GROWN IN BELIZE.  
F4 SEED PRODUCED.
- 1979 F4 GENERATION GROWN IN MARYLAND. 154 F4 PLANTS SELECTED  
FROM THE BULK POPULATION AND THRESHED INDIVIDUALLY.
- 1980 F5 PROGENY ROW M77858-Q80-81749 WAS SELECTED FOR ITS  
UNIFORMITY, STANDABILITY AND APPEARANCE. THIS ROW WAS  
HARVESTED IN BULK AND VERIFIED FOR UNIFORM HILUM COLOR.  
IT WAS IN OCTOBER, 1980 THAT M77858-Q80-81749 WAS FOUND  
TO BE UNIQUE AND UNIFORM.
- 1981 M77858-Q80-81749 WAS ENTERED IN THE PRELIMINARY P412  
YIELD TEST CONDUCTED IN MISSOURI AND MARYLAND. IT WAS  
SELECTED FOR ITS YIELD AND STANDABILITY.
- 1982 M77858-Q80-81749 WAS ENTERED IN THE VARIETY V501 YIELD  
TEST WHICH WAS GROWN AT 10 LOCATIONS IN MD., DE., VA.,  
N.C., KY., MO. AND MS. IT WAS SELECTED FOR HIGH YIELD  
AND STANDABILITY.
- 1983 M77858-Q80-81749 WAS ENTERED IN THE VARIETY V501 TEST  
WHICH WAS GROWN AT 10 LOCATIONS IN MD., DE., VA., N.C.,  
KY., TN., AND MS. IT WAS SELECTED FOR ITS YIELD,  
DISEASE TOLERANCE, STANDABILITY AND PERFORMANCE IN LATE  
PLANTED SITUATIONS.  
M77858-Q80-81749 WAS GIVEN THE MATURITY DESIGNATION  
XP5149. THIRTEEN POUNDS OF BREEDER SEED WERE PRODUCED  
IN MARYLAND. THIS BREEDER SEED WAS SENT TO PUERTO  
RICO FOR INCREASE.
- 1983-84 600 POUNDS OF BASIC SEED STOCK WERE PRODUCED IN  
PUERTO RICO AND SENT TO MISSOURI FOR INCREASE.
- 1984 XP5149 WAS ENTERED IN THE VARIETY V501 TEST WHICH WAS  
GROWN AT 8 LOCATIONS IN MD., DE., VA., N.C., TN., KY.,  
AND MO. IT WAS SELECTED FOR HIGH YIELD, STANDABILITY  
AND GOOD DISEASE TOLERANCE.

Asgrow Seed Company  
PVP Application - Soybean A5149  
October 11, 1985  
Exhibit A - Page 2

Trial evaluations since 1980 indicate A5149 is uniform and stable. As with other soybean varieties, variants can occur for almost any characteristic during the course of repeated sexual reproduction.

Asgrow Seed Company  
 PVP Application - Soybean A5149  
 October 11, 1985

## EXHIBIT B

## NOVELTY STATEMENT CONCERNING A5149 SOYBEAN

To our knowledge, the soybean variety that most closely resembles A5149 is Coker 425. Characteristics which differentiate A5149 from Coker 425 include, but are not necessarily restricted to, the following:

## 1. Plant height

	Avg. Hgt* (cm)	Link- wood	Queens town	Late Planting	Selby ville	Mills- boro	Franklin
A5149	91.3	81.6	99.5	91.8	99.5	84.2	91.8
		94.4	104.6	94.4	94.4	79.1	94.4
		91.8	102.0	91.8	102.0	84.2	91.8
		91.8	102.0		96.9	84.2	94.4
Coker 425	80.5	76.5	84.2	81.6	91.8	71.4	86.7
		76.5	81.6	74.0	91.8	71.4	86.7
		76.5	81.6	84.2	84.2	71.4	86.7
		84.2	81.6		94.4	71.4	89.3

\* Avg. hgt. of 23 reps grown at 6 locations

Lsd .01 = 6.3

## 2. Seed Size

	GMS/100 Seed
A5149	18
Coker 425	13

## 3. Seed Coat Luster

A5149	Shiny
Coker 425	Dull

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
LIVESTOCK, MEAT, GRAIN & SEED DIVISION  
PLANT VARIETY PROTECTION OFFICE  
BELTSVILLE, MARYLAND 20705

EXHIBIT C  
(Soybean)

OBJECTIVE DESCRIPTION OF VARIETY  
SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) Asgrow Seed Company	TEMPORARY DESIGNATION	VARIETY NAME A5149
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) 9620-190-20 Gull Road Bldg. 190 Kalamazoo, MI 49001	FOR OFFICIAL USE ONLY PVPO NUMBER 8600018	

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,  ). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

## 1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)  
3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)

2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)  
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

## ★ 2. SEED COAT COLOR: (Mature Seed)

1 = Yellow

2 = Green

3 = Brown

4 = Black

5 = Other (Specify) \_\_\_\_\_

## 3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton')

2 = Shiny ('Nebsoy'; 'Gasoy 17')

## ★ 4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

## ★ 5. HILUM COLOR: (Mature Seed)

1 = Buff

2 = Yellow

3 = Brown

4 = Gray

5 = Imperfect Black

6 = Black

7 = Other (Specify) \_\_\_\_\_

## ★ 6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow

2 = Green

## ★ 7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low

2 = High

## ★ 8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1<sup>a</sup>)2 = Type B (SP1<sup>b</sup>)

## ★ 9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis')

2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')

3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')

4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

## ★ 10. LEAFLET SHAPE:

1 = Lanceolate

2 = Oval

3 = Ovate

4 = Other (Specify) \_\_\_\_\_

## 11. LEAFLET SIZE:

☐ 21 = Small ('Amsoy 71'; 'A5312')  
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

## 12. LEAF COLOR:

☐ 21 = Light Green ('Weber'; 'York')  
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

## ★ 13. FLOWER COLOR:

☐ 2

1 = White

2 = Purple

3 = White with purple throat

## ★ 14. POD COLOR:

☐ 1

1 = Tan

2 = Brown

3 = Black

## ★ 15. PLANT PUBESCENCE COLOR:

☐ 2

1 = Gray

2 = Brown (Tawny)

## 16. PLANT TYPES:

☐ 11 = Slender ('Essex'; 'Amsoy 71')  
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amcor'; 'Braxton')

## ★ 17. PLANT HABIT:

☐ 1

1 = Determinate ('Gnome'; 'Braxton')

2 = Semi-Determinate ('Will')

3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

## ★ 18. MATURITY GROUP:

☐ 0 ☐ 8

1 = 000

2 = 00

3 = 0

4 = I

5 = II

6 = III

7 = IV

8 = V

9 = VI

10 = VII

11 = VIII

12 = IX

13 = X

## ★ 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

## BACTERIAL DISEASES:

★ ☐ 0Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)★ ☐ 2Bacterial Blight (*Pseudomonas glycinea*)★ ☐ 0Wildfire (*Pseudomonas tabaci*)

## FUNGAL DISEASES:

★ ☐ 0Brown Spot (*Septoria glycines*)Frogeye Leaf Spot (*Cercospora sojina*)★ ☐ 0

Race 1

☐ 0

Race 2

☐ 0

Race 3

☐ 0

Race 4

☐ 0

Race 5

☐

Other (Specify)

☐ 0Target Spot (*Corynespora cassicola*)☐ 2Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)☐ 2Powdery Mildew (*Microsphaera diffusa*)★ ☐ 2Brown Stem Rot (*Cephalosporium gregatum*)☐ 2Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

6

## 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

## FUNGAL DISEASES: (Continued)

- ★ ☐ 0 Pod and Stem Blight (*Diaporthe phaseolorum* var; *sojae*)
- ☐ 0 Purple Seed Stain (*Cercospora kikuchii*)
- ☐ 0 Rhizoctonia Root Rot (*Rhizoctonia solani*)
- Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)
- ★ ☐ 1 Race 1 ☐ 0 Race 2 ☐ 1 Race 3 ☐ 0 Race 4 ☐ 0 Race 5 ☐ 0 Race 6 ☐ 0 Race 7
- ☐ 0 Race 8 ☐ 0 Race 9 ☐ Other (Specify) \_\_\_\_\_

## VIRAL DISEASES:

- ☐ 0 Bud Blight (Tobacco Ringspot Virus)
- ☐ 0 Yellow Mosaic (Bean Yellow Mosaic Virus)
- ★ ☐ 0 Cowpea Mosaic (Cowpea Chlorotic Virus)
- ☐ 0 Pod Mottle (Bean Pod Mottle Virus)
- ★ ☐ 0 Seed Mottle (Soybean Mosaic Virus)

## NEMATODE DISEASES:

- Soybean Cyst Nematode (*Heterodera glycines*)
- ★ ☐ 1 Race 1 ☐ 0 Race 2 ☐ 1 Race 3 ☐ 1 Race 4 ☐ Other (Specify) \_\_\_\_\_
- ☐ 0 Lance Nematode (*Hoplolaimus Colomus*)
- ★ ☐ 0 Southern Root Knot Nematode (*Meloidogyne incognita*)
- ★ ☐ 0 Northern Root Knot Nematode (*Meloidogyne Hapla*)
- ☐ 0 Peanut Root Knot Nematode (*Meloidogyne arenaria*)
- ☐ 0 Reniform Nematode (*Rotylenchulus reniformis*)
- ☐ OTHER DISEASE NOT ON FORM (Specify): \_\_\_\_\_

## 20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ★ ☐ 0 Iron Chlorosis on Calcareous Soil
- ☐ Other (Specify) \_\_\_\_\_

## 21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ☐ 0 Mexican Bean Beetle (*Epilachna varivestis*)
- ☐ 0 Potato Leaf Hopper (*Empoasca fabae*)
- ☐ Other (Specify) \_\_\_\_\_

## 22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	Bragg	Seed Coat Luster	A4997
Leaf Shape	Bragg	Seed Size	York
Leaf Color	Bragg	Seed Shape	York
Leaf Size	Bragg	Seedling Pigmentation	



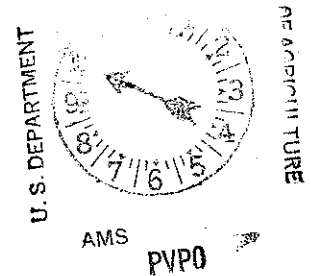
## 23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/POD
				CM Width	CM Length	% Protein	% Oil		
A5149 Submitted	134	2.1	91	8.9	15.4			18	
Coker 425 Name of Similar Variety	135	3.0	81	8.4	14.6			13	

## PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBT1-A<sub>2</sub> in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

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October 11, 1985

EXHIBIT D

A5149 is an early maturity Group V determinate cultivar. A5149 combines consistent yields, excellent standability, taller plant height and good disease tolerance to provide farmers a superior alternative to many early Group V cultivars being grown.

Asgrow Seed Company  
PVP Application - Soybean A5149  
October 11, 1985

EXHIBIT E

Statement of the Basis of Applicant's Ownership

A5149 was originated and developed by John A. Schillinger and William Rhodes, Asgrow Plant Breeders. By agreement between employee and Asgrow Seed Company, all rights to any invention, discovery, or development made by an employee are assigned to the Company. No rights to such invention, discovery, or development are retained by the employee.

mga  
b:A5149